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(54) Method and system for the retrieval of personalized information

Verfahren und Gerät zum Auffinden und Beschaffen personalisierter Informationen

Méthode et système pour la recherche d'information personalisée

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(73) Proprietor: **SUN MICROSYSTEMS, INC.**
Mountain View, CA 94043 (US)

(72) Inventor: **Dasan, Vasanthan S.**
Colorado Springs, Colorado 80920 (US)

(74) Representative: **W.P. Thompson & Co.**
Coopers Building,
Church Street
Liverpool L1 3AB (GB)

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Description

[0001] The present invention relates to information retrieval.

[0002] More specifically, the present invention relates to a client/server model for information retrieval based upon a user-defined profile, for example, for the generation of an "electronic" newspaper which contains information of interest to a particular user.

[0003] The development of computerized information resources, such as the Internet, and various on-line services, such as Compuserve, America On-line, Prodigy, and other services, has led to a proliferation of electronically-available information. In fact, this electronic information is increasingly displacing more conventional means of information transmission, such as newspapers, magazines, and even, television. The primary issue in all of these resources is filtering the vast amount of information which is available in order that a user obtain that information which is of interest to him.

[0004] Currently, a user who subscribes to one of the above-services, or uses the Internet, must manually scan through the various information resources in order to obtain articles, postings, or other files which are of interest. Typically, the user manually scans in areas or sources of interest (publications, USENet Newsgroups, fora, or other areas classified by topic) to find topic areas which may be of interest to the user. The user then retrieves articles or files which have subject headings, for example, matching those which the user wishes to read. For example, certain USENet newsgroups on the Internet have an established etiquette (known as "netiquette"), wherein postings must have relevant subject headings to permit this type of manual scanning. Article headings in newspapers/magazines serve similar functions. Thus, if the user does not wish to view those stories with products for sale, then he simply ignores those postings having the term "For Sale" in the subject heading. Finally, as a last level of filtering, the user can read the stories which have been filtered by topic, and subject heading, and if anytime during the viewing of the story the user wishes to ignore the rest of the article, he can stop reading it and simply discard the story. If desired, the user can download the remaining stories in any number of prior art ways, for off-line viewing.

[0005] As is clearly evident, this manual scanning process which a user must engage in is very time-consuming. To some extent, news is already filtered for readers. Those that subscribe to certain magazines/newspapers, or view certain television networks, already have the vast base of electronically-available information (e.g. wire services) filtered for them. However, this "filtering" is performed on a large-scale basis, for a wide audience. The tailoring of specific stories of interest to particular users has not been performed. Thus, a need has arisen to automatically sort through the large variety of electronic sources in order to generate a subset of the stories available in electronic form which is tailored to a user's specific interests is desired.

[0006] In Powell J., World-Wide Web, Database, Feb 1994, Vol. 17(1), pp 59-66 a method of creating a hypertext library information system is disclosed, where related documents are connected by 'Links' whereby a web of interconnected information spanning the Internet is created. A user has however to manually engage the links from session to session with no server being suggested for engaging a first application program to retrieve a user-defined profile identified by the user among others.

[0007] In Salomom, M.E. and D.C. Martin, An Electronic journal Browser implemented in the World-Wide Web, Proceedings of the Second International WWW Conference 1994: Mosaic and the Web, January 11, 1994, a system is disclosed which enables biomedical researchers to access a server containing journal articles. The articles are WAIS-indexed by Medical Subject Headings. These headings are the only keywords by which a user may search the database.

[0008] The system provides also an alerting system based on user-established profiles: an alert program runs on the server, collects information from a central database based on the user-established profiles, and electronically transmits the information to a user. Information is retrieved from the central database only; there is no notion of retrieving information stored on a plurality of computers.

[0009] WO-A-94 23383 discloses a system for creating a self-publishing online catalogue where a user receives a catalogue of products individualized to his interests. An autonomous process in the form of an agent runs on a server connected to a central database with product offers, it collects those product offers based on the users profile. The operation of the alert program is limited to a central database. Product information is retrieved from the central database only; there is no notion of retrieving information stored on a plurality of computers.

[0010] Thus, the prior art of obtaining user-relevant information from electronic sources suffers from several shortcomings.

[0011] According to the present invention there is provided a computer-implemented method of retrieving information as set out by claim 1.

[0012] According to a further feature of the present invention there is provided a system for retrieving information as set out in claim 11.

[0013] The present invention thus provides an automatic method and system for retrieving information based on a user-defined profile (e.g. a personalized newspaper). A user-controlled client establishes communication with a stateless server, the server presenting a list of options to the client (e.g. via HTTP exchanges) between the server and the client. The client provides an identification of the user-defined profile. The server engages a first application program (e.g. via a Common Gateway Interface (CGI)), the first application program

retrieving the user-defined profile wherein the user-defined profile identifies information which is of interest to the user. The first application program examines a database of information and automatically retrieves a subset of the information from the database based upon which information is of interest to the user as specified in the user-defined profile. The server presents the subset of the information from the database as generated by the first application program to the client.

[0014] In one implementation the client comprises an HTTP browser application program and the server comprises an HTTP server application program operative on a remote computer system. The first application program stores a file containing the user-defined profile in order to retain a state of the user-profile, and cause the stateless HTTP server to emulate a server which retains its state from session to session.

[0015] In one implementation, the first application program examines the database of information and automatically retrieves a subset of the information from the database based upon the user-defined profile at periodic intervals, in order, for example, to keep the newspaper up-to-date.

[0016] The user-defined profile can include source identifications and associated search terms wherein the first application scans in the information (e.g. a raw news source, USENet newsgroup or other resource) for sources identified by the source identifications. A first set of files in the sources containing the associated search terms may then be identified and the first application program places the first set of files into the subset of the information, for creation of the personalized information - the newspaper. The source identifications and associated search terms from the user-defined profile can be stored by topic wherein the subset is displayed to the user arranged by topic.

[0017] The first application program can also cause the server to present options to the user to create or modify the profile, including, a first option to allow the user to specify source identifications in the information and associated search terms to search for in the source identifications to the user-defined profile; and a second option to specify delete and/or change the source identifications and/or the associated search terms in the profile.

BRIEF DESCRIPTION OF THE DRAWINGS

[0018] The present invention will now be further described by way of example with reference to the accompanying drawings in which like references indicate like elements and in which:

Figure 1 shows a client/server system in which embodiments of the present invention may be implemented.

Figure 2 shows a more detailed view of the client/server illustrated in Figure 1.

Figure 3 shows the structure of a workstation in which the client or server may be operative.

Figure 4 shows a more detailed view of the processes operative within the server.

Figures 5a and 5b shows a sequence of steps performed in the server for generation of a profile and/or creation of a personal newspaper.

Figure 6 shows the display screen for user control of the process illustrated in Figures 5a and 5b.

Figure 7 shows a process of adding a topic to a profile.

Figure 8 shows a display used for controlling the operation of the process in figure 7.

Figure 9 shows a process of editing a user profile.

Figure 10 shows a display used for controlling the editing process.

Figure 11 shows the results of execution of the personal newspaper generation process according to the user-defined profile.

Figure 12 shows the viewing of a single article contained in the personal newspaper.

DETAILED DESCRIPTION

[0019] The present invention is a method and apparatus for automatically scanning information using a user-defined profile, and providing relevant stories from that information to a user based upon that profile. Although the following will be described with reference to certain particular embodiments, including data structures, flow of steps, hardware configurations, etc..., it will be apparent to one skilled in the art that implementations of the present invention can be practiced without these specific details.

[0020] Implementations of the present invention use a client/server architecture, as illustrated in Figure 1, wherein user requests 110 for news are sent by a client application program 100 to a server 150 (typically, a remote computer system accessible over the Internet or other communication medium). The server 150, as will be described in more detail below, performs scanning and searching of raw (e.g. unprocessed) information sources (e.g. newswires or newsgroups), based upon these user requests, presents the filtered electronic information as server responses 160 to the client process. The client process may be active in a first computer system, and the server process may be active in a second computer system, and communicate with one another over a communication medium, thus providing distributed functionality and allowing multiple clients to take advantage of the information gathering capabilities of the server.

[0021] A more detailed view of the client and server are shown in Figure 2. Although the client and server are processes which are operative within two computer systems, these processes being generated from a high level programming language (e.g. C or C++), compiled and executed in a computer system (e.g. a workstation),

it can be appreciated by one skilled in the art that they may be implemented in a variety of hardware devices, either programmed or dedicated.

[0022] Client 100 and server 150 communicate using the functionally provided by the World-Wide Web (WWW). Clients and servers of the WWW communicate over a communication medium 250 using a standard known as the Hypertext Transfer Protocol (HTTP). In some embodiments, the client and server may be coupled via Serial Line Internet Protocol (SLIP) or TCP/IP connections for high-capacity communication. Active within the client is a first process, known as a "browser" 200, which establishes the connection with server 150, and presents information to the user. Any number of commercially or publicly-available browsers may be used, in various implementations, however in this implementation, browser 200 is the Mosaic brand browser (version 2.0 or greater) available from the National Center for Supercomputing Applications (NCSA) in Urbana-Champaign, Illinois. Other browsers such as the Netscape, Netcruiser, or the Lynx brand browsers, or others, which are available and provide the functionality specified under HTTP and the Mosaic version 2.0 brand browser or above may be used.

[0023] The server 150 executes the corresponding server software which presents information to the client in the form of HTTP responses. The HTTP responses correspond with the web "pages" represented using Hypertext Markup Language (HTML), or other data which is generated by the server, as will now be discussed.

[0024] A shortcoming of HTTP is that it is a stateless protocol. The Web "page" from which user transactions may be performed in the server under control of the client is not recalled from client-session to client-session. In this implementation of the present invention the user is able to connect to the remote server and specify a user profile, setting forth his interests. The user is able to specify the context for the information to be searched (e.g. the date). The user is able to save the profile on the remote machine. Finally the user is able to retrieve the personal profile (with any access control, if desired) and edit (add or delete entries) and save it for future operations.

[0025] All of this functionality requires an underlying mechanism which is unmet by current versions of HTTP. Under the Mosaic brand browser 2.0 and greater, in addition to HTML functionality 210 provided by the server (display and retrieval of certain textual and other data based upon Hypertext views and selection of item(s)), a Common Gateway Interface (CGI) 220 is provided which allows the client program to direct the server to commence execution of a specified program contained within the server. Using this interface, and HTTP, the server may notify the client of the results of that execution upon completion. The server's application program, the personal newspaper generator, maintains a record of the state of each user's profile, and thus, provides state functionality from session to session to an otherwise stateless protocol.

[0026] In order to control the parameters of the execution of this server-resident process, the client may direct the filling out of certain "forms" from his browser. This is also provided by the "fill-in forms" functionality 230 available under Mosaic version 2.0 and greater, which allows the user via his client application program 100, to specify a "profile" in which the server will cause an application program to function (e.g. the types of stories/articles which are of interest to the user). The details of a user profile will be discussed below.

[0027] A computer system, such as a workstation, personal computer or other processing apparatus in which the client 100 or server 150 may be operative is illustrated in Figure 3. A workstation in which one implementation of the present invention may be practiced includes system 300. 300 comprises a bus or other communication means 301 for communicating information, and a processing means 302 coupled with bus 301 for processing information. System 300 further comprises a random access memory (RAM) or other volatile storage device 304 (referred to as main memory), coupled to bus 301 for storing information and instructions to be executed by processor 302. Main memory 304 also may be used for storing temporary variables or other intermediate information during execution of instructions by processor 302. System 300 also comprises a read only memory (ROM) and/or other static storage device 306 coupled to bus 301 for storing static information and instructions for processor 302, and a data storage device 307 such as a magnetic disk or optical disk and its corresponding disk drive. Data storage device 307 is coupled to bus 301 for storing information and instructions. This may be used for storage of the databases to be described here which maintain information about currently defined problem descriptions using commercially available software products.

[0028] System 300 may further be coupled to a display device 321, such as a cathode ray tube (CRT) or liquid crystal display (LCD) coupled to bus 301 for displaying information to a computer user. Such a display 321 may further be coupled to bus 301 via a frame buffer 310, which information such as a single or multiple frames or images for display upon display device 321. An alphanumeric input device 322, including alphanumeric and other keys, may also be coupled to bus 301 for communicating information and command selections to processor 302. An additional user input device is cursor control 323, such as a mouse, a trackball, stylus, or cursor direction keys, coupled to bus 301 for communicating direction information and command selections to processor 302, and for controlling cursor movement on display 321.

[0029] Note, also, that any or all of the components of system 300 and associated hardware may be used in various embodiments, however, it can be appreciated that any configuration of the system may be used for various purposes according to the particular implemen-

tation.

[0030] In one embodiment, system 300 is one of the Sun Microsystems® brand family of workstations such as the SPARCstation brand workstation manufactured by Sun Microsystems® of Mountain View, California. Processor 302 may be one of the SPARC brand microprocessors manufactured by Sun Microsystems®, Inc. of Mountain View, California.

[0031] Note that the following discussion of various embodiments discussed herein will refer specifically to a series of routines which are generated in a high-level programming language (e.g., the C or C++ programming language) and compiled, linked, and then run as object code in system 300 during run-time, for example by the SPARCompiler available from SunSoft of Mountain View, California (SPARC and SPARCstation are trademarks of SPARC International, Inc. and are licensed exclusively to Sun Microsystems). These further are used in conjunction with the browser and server software available from NCSA, as described above, including the specification of the appearance of displays in HTML. It can be appreciated by one skilled in the art, however, that the following methods and apparatus may be implemented in special purpose hardware devices, such as discrete logic devices, large scale integrated circuits (LSI's), application-specific integrated circuits (ASIC's), or other specialized hardware. The description here has equal application to apparatus having similar function.

[0032] Figure 4 illustrates the interaction between the server 150 and newspaper generator application program 400, which is operative under control of the CGI in the server. Depending upon user input, requests are sent to the active application in the server, in this case the personal newspaper generator 400, which causes the application to perform certain functions. For example, in the case of a profile which does not already exist in the server, newspaper generator 400 allows the creation and editing of search specifications, known as a "profile", on the server. This allows the server to generate the personal newspaper for the client when requested, or at regular intervals, according to implementation.

[0033] The user profile or requests which are received from the CGI 220 in the server 150 cause the newspaper generator to perform certain actions. For example, in the case of a profile creation, the profile is created and stored in local files, such as 410, which may be accessed at a later time by the server during editing operations or during creation of the newspaper. In this way, the stateless protocol of HTTP is transformed into a state-protocol, wherein the client or user profile is recalled from session to session. This also allows periodic automatic generation of the personal newspaper, for example, at regular intervals, such as several times a day or week, according to implementation.

[0034] As illustrated, the newspaper generator 400 uses a plurality of raw news sources 420, 430, and 440, which may be any of a number of available raw news feeds. For example, each of these may be a separate news source or wire service (e.g. Reuters, Associated Press), while another may be an electronic discussion group (e.g. a USENet newsgroup). Any number or types of sources may be used, according to implementation.

[0035] Figures 5a and 5b illustrates the logic of the operation of the personal newspaper generator. First, at step 502, the newspaper's front page, or welcome screen is displayed. This is the page which is displayed when the use first accesses the server via the specification of a URL (Uniform Resource Locator). A display screen, such as 600 illustrated in Figure 6, is displayed upon the user's console. Options and other data entered on the form displayed on the console are committed, causing invocation of the newspaper generation program, upon selection by the user of the "doit" icon 610 on display 600. At step 504, the user can then enter, via the forms support in the browser, a profile or user name in field 602. This is enabled by selecting using a selection device or other means, and filling in the selected blank with the profile name (typically, an e-mail address of the user). If desired in the given implementation, access control may be performed at step 506, wherein the user is queried for a password.

[0036] If the user wishes to edit the profile as detected at step 508, which is indicated by the selection of the user interface object 604, then process 500 proceeds to Figure 5b. If not (user interface object 606 is selected), then the user may specify a date for which the personal newspaper will be generated, such as by filling in the field 608 in the user interface form, by a pull-down, popup menu, or other means. Then, at step 512 it is determined whether the profile for the user exists. If so, then the newspaper is generated using the stored profile. According to the topics/subject/keywords selected by the user in his profile, the raw news source(s) are scanned, and that information matching the profile is gathered at step 514. If the profile does not exist, then at step 516, the user is given the options for creating and editing the profile.

[0037] If the user desired to edit and/or lookup the profile (icon 604 is selected) then, it is determined at step 518 on Figure 5b whether the profile exists. If not, then the user is given the option to create a new profile. Then, the user can edit the profile, if created or it already exists, at step 522. Upon completion of any editing operations, the process is complete and returns to Figure 5b.

[0038] A personal news profile is stored in a ASCII text file by topic by the newspaper generator. Each topic contains a number of sources (e.g. publications or newsfeeds) to search and corresponding search term(s). As in certain full-text retrieval systems, search terms may be delimited by disjunctions (the "|" character). An example of a news profile is as follows:

```
Sun News~.*~Sun Microsystems|SMCC|SunSoft~insensitive
Microsoft~.*~Microsoft~insensitive
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Internet~usa.headlines|usa.national|opinions-editorials| businesswire|prnewswire|business:finance| international.france|international.germany|international.japan international.other~Internet|Information SuperHighway|Mosaic|WWW~insensitive
Colorado~usa.headlines|usa.national|opinionseditorials| businesswire|pr-newswire|business.finance|international.france international.germany|international.japan|international.other~ Colorado|Denver|Boulder~insensitive

Each of the lists of strings for topics, sources and keywords are delimited in the file by the "~" character. The initial string (e.g. "Sun News") identifies the topic, the second set of strings (e.g. ".*") identifies the files specifications for the sources (wherein ".*" indicates searching in all raw sources), the next set of strings are the search terms, and the final string indicates whether the search terms are case sensitive or not. The creation and editing of a profile will now be discussed.

[0039] The adding of topics to a news profile is shown in Figures 7 and 8. Figure 7 shows the process steps performed by the profile generator portion of the newspaper generator, and Figure 8 shows the user interface which controls the adding of topics to the profile. First, at step 702, the user labels the topic of interest, such as by filling in the field 802 provided by the fill-in forms feature of HTML or CGI. At step 704, the user specifies search terms used in the full-text search. These are illustrated in field 804. Any number of search terms may be used and the "|" character is treated as a disjunction ("or"). Then, by selecting either of user interface objects 806 or 808, the user specifies whether the search terms are case sensitive or not. This is detected at step 706. At step 708, using either a scrollable list containing selectable item(s), as illustrated in field 810, or other means, the user specifies the search context(s) (the publications, newsfeeds, etc...) in which to search. By the selection of icon 812 or other commit means, the data entered into the screen 800 at step 710 is added to the user profile for generation of the newspaper.

[0040] The process steps and user interface for editing a user profile is shown in Figures 9 and 10. For example, for a particular profile as displayed on screen 1000, any of the selection icons 1002-1010 may be selected for modification of that topic. At step 902 it is determined whether the user has selected the "delete" option for deleting topics from the profile (e.g. the selection of icon 1012 on screen 1000). If so, then the selected item(s) are deleted at step 904. Then it is determined at step 906 whether the user has selected the "add" icon 1014. If so, then the add option (process 700 of Figure 7) is invoked at step 908. It is then determined at step 910 whether the generation of the newspaper based upon the profile is requested by the user. This is indicated by the user selecting icon 1018 (including, specifying a date for which the newspaper should be generated in field 1016). The specification of the date limits the scope of the search to the date(s) specified. If generation of the newspaper is requested, then the newspaper is generated based upon the profile at step 912.

[0041] As previously discussed, the process for actually creating the newspaper functions as a full-text retrieval system which is controlled by the context(s) (e.g. source(s) and date(s)) and corresponding search term (s) specified in each of the topics contained in the profile. This functions much in the same way as other on-line full-text retrieval systems except that it may be automatically performed by the server on demand or at periodic intervals, and that it is under control of the stored profile. The mechanics of this will be briefly discussed.

[0042] In implemented embodiments, raw news sources come in as large text files with a predetermined format. The full-text searching process performed during newspaper generation is executed upon these large files. Upon location of certain search terms having the specified context(s) in the file, the portion of the file containing the located article is parsed so as to be converted into an individual ASCII file which is resident on the server. The file names of the articles are unique, for unique reference using HTML. In implemented embodiments, the article file names are in numeric form and are the year, month, date, hour, minute and second the article was created all concatenated in order to be unique (no two articles are received exactly the same second). Then, via a second parsing process, the title of the article is used to create an anchor in the HTML page representation of the personal newspaper, which references the article by its file specification. Upon selection by the user, the text of the article can then be referenced at the server, and displayed as a second HTML page.

[0043] Figure 11 shows the results of the creation of a personal newspaper - the personal newspaper main screen. This is displayed at the client as a result of the full-text searching, the parsing and HTML page generation process performed at the server as discussed above. As illustrated in screen 1100, the profile name is displayed as 1102. Each of the topics from the profile is listed in a first level heading, such as 1104, 1106, 1108, etc... Each of the first level topic headings are followed by second level headings, such as 1106a-1106c, 1108a-11081, etc..., listing the names of stories, if any, which match the search terms and sources. Via the selection by the user of the headings for each of the stories (the above-mentioned anchors), the text for the story may be referenced and viewed. An example of the display of an article from the personal newspaper is illustrated in screen 1200 of Figure 12. Via HTML, a reference may also be inserted in the HTML page containing the article in order to allow the user to return to the personal newspaper main screen (not shown).

[0044] Thus, method and apparatus for a client application program retrieving data from a server based upon a defined and stored user profile of desired information has been described. Note that though the foregoing has particular utility and has been described with reference

to certain specific embodiments in the figures and the text, that one may practice the present invention without implementing all of these specific details. Thus, the figures and the text are to be viewed an illustrative sense only, and not limit the present invention. The present invention is only to be limited by the appended claims which follow.

Claims

1. A computer implemented method of retrieving information comprising the steps of:

   a. a user-controlled client (100) establishing communication with a server (150), said server being coupled to a network;
   b. said client (100) providing an identification of a user-defined profile (410) to said server (150);
   c. said server (150) engaging a first application program (400), said first application program (400) retrieving said user-defined profile (410);
   d. said first application program (400) examining information stored on a plurality of computers (420,430,440) coupled to said network and automatically retrieving a subset of said information from said plurality of computers (420, 430, 440) based upon said user-defined profile (410); and
   e. said first application program (400) transmitting said subset of said information from said plurality of computers (420, 430, 440) to said server (150) and said server (150) presenting said subset of said information to said client (100).

2. The method of claim 1 wherein said client (100) comprises an HTTP (Hypertext Transfer Protocol) browser active on a first computer system and said server (150) comprises an HTTP server application program active on a second computer system.

3. The method of claim 2 wherein said HTTP server application program communicates with said first application program (400) active on said second computer system with a Common Gateway Interface (GCI 220).

4. The method of claim 3 further comprising the step of said first application program (400) storing a file in said second computer system containing said user-defined profile (410) in order to retain a state of said user-profile.

5. The method of claim 2 wherein said step of said first application program (400) examining said information and automatically retrieving a subset of said information from said plurality of computers (420,430,440) based upon said user-defined profile (410) is performed at periodic intervals irrespective of said client (100) establishing communication with said server (150).

6. The method of claim 1 wherein said step of said first application program (400) examining said information and automatically retrieving a subset of said information from said plurality of computers (420,430,440) based upon said user-defined profile (410) includes:

   a. said first application program (400) retrieving source identifications (810) and associated search terms from said user-defined profile (410);
   b. said first application (400) scanning said information for sources identified by said source identifications (810) and identifying a first set of files in said sources containing said associated search terms; and
   c. said first application program (400) placing said first set of files into said subset of said information.

7. The method of claim 6 wherein said source identifications (810) associated search terms from said user-defined profile are stored by topic.

8. The method of claim 1 further comprising the step of said first application program (400) causing said server (150) to present options (800) to said user to create or modify said profile (410), said options (800) including:

   a. a first option allowing said user to specify source identifications in said information and associated search terms to search for in said source identifications to said user-defined profile (410); and
   b. a second option allowing said user to specify delete and/or change said source identifications and/or said associated search terms in said profile (410).

9. The method of claim 8 wherein said source identifications (810) and said associated search terms are organized by topics.

10. The method of claim 8 wherein said server presenting said subset of said information as generated by said first application program comprises presenting said subset organized by said topics.

11. A system for retrieving information comprising.

    a. a server (150) coupled to a network and hav-

ing an interface for engaging a first application program (400) responsive to a client (100) providing an identification of a user-defined profile (410);
b. said server (150) having an execution control interface for causing said first application program (400) to examine information stored on a plurality of computers (420,430,440) coupled to said network and automatically retrieve a subset of said information based upon which information is of interest to said user as identified in said user-defined profile (410); and
c. said server (150) having a presentation circuit for presenting said subset of said information from said plurality of computers (420,430,440) to said client (100) responsive to a request by said client (100).

12. The system of claim 11 wherein said client (100) comprises an HTTP (Hypertext Transfer Protocol) browser (200) operative on a first computer system and said server (150) comprises an HTTP server (150) operative on a remote computer system.

13. The system of claim 11 wherein said server (150) further includes a profile (410) circuit for allowing said client (100) to specify said user-defined profile (410) and storing a file containing said user-defined profile (410) in order to retain a state of said user-defined profile (410).

14. The system of claim 11 wherein said execution control interface comprises an activation circuit for activating said first application program (400) at periodic intervals to cause said first application program (400) to perform said examining said information and automatically retrieving a subset of said information from said plurality of computers (420,430,440) based upon said user-defined profile (410).

15. The system of claim 11 wherein said first application program (400) examining said information and automatically retrieving a subset of said information from said plurality of computers (420,430,440) upon said user-defined profile (410) includes:

a. said first application program (400) retrieving source identifications. (810) and associated search terms from said user-defined profile (410);
b. said first application program (400) scanning said information for sources identified by said source identifications and identifying a first set of files in said sources containing said associated search terms; and
c. said first application program (400) placing said first set of files into said subset of said information.

16. The system of claim 15 wherein said source identifications (810) and associated search terms from said user-defined profile are stored by topic.

17. The system of claim 11 further comprising said server (150) having an option presentation circuit for presenting said options (800) to said user to create or modify said profile (410), said options (800) including:

a. a first option allowing said user to specify source identifications in said information and associated search terms to search for in said source identifications of said user-defined profile (410); and
b. a second option allowing said user to specify delete and/or change said source identifications and/or said associated search terms in said profile (410).

18. The system of claim 17 wherein said source identifications (810) and said associated search terms are organized by topics.

19. The system of claim 18 wherein said presentation circuit for presenting said subset of said information as generated by said first application program (400) comprises a topic presentation circuit for presenting said subset of said information organized by said topics.

Patentansprüche

1. Rechnerimplementiertes Verfahren zum Abrufen von Informationen, umfassend die folgenden Schritte:

a. einen benutzergesteuerten Client (100) zum Herstellen von Kommunikation mit einem Server (150), wobei der genannte Server mit einem Netzwerk verbunden ist;
b. wobei der genannte Client (100) eine Identifikation eines benutzerdefinierten Profils (410) zu dem genannten Server (150) sendet,
c. wobei der genannte Server (150) ein erstes Anwendungsprogramm (400) aktiviert, wobei das genannte erste Anwendungsprogramm (400) das genannte benutzerdefinierte Profil (410) abruft;
d. wobei das genannte erste Anwendungsprogramm (400) Informationen untersucht, die auf einer Mehrzahl von mit dem genannten Netzwerk gekoppelten Computern (420, 430, 440) gespeichert sind, und automatisch eine Teilmenge der genannten Informationen aus der

genannten Mehrzahl von Computern (420, 430, 440) auf der Basis des genannten benutzerdefinierten Profils (410) abruft; und
e. wobei das genannte erste Anwendungsprogramm (400) die genannte Teilmenge der genannten Informationen von der genannten Mehrzahl von Computern (420, 430, 440) zu dem genannten Server (150) sendet und der genannte Server (150) die genannte Teilmenge der genannten Informationen dem genannten Client (100) präsentiert.

2. Verfahren nach Anspruch 1, wobei der genannte Client (100) einen auf einem ersten Computersystem aktiven HTTP (Hypertext Transfer Protocol) Browser und der genannte Server (150) ein auf einem zweiten Computersystem aktives HTTP-Server-Anwendungsprogramm umfasst.

3. Verfahren nach Anspruch 2, bei dem das genannte HTTP-Server-Anwendungsprogramm über eine Common Gateway Interface (GCI 220) mit dem genannten, auf dem genannten zweiten Computersystem aktiven ersten Anwendungsprogramm (400) kommuniziert.

4. Verfahren nach Anspruch 3, ferner umfassend den Schritt, dass das genannte erste Anwendungsprogramm (400) eine Datei in dem genannten zweiten Computersystem speichert, die das genannte benutzerdefinierte Profil (410) enthält, um einen Zustand des genannten Benutzerprofils zu behalten.

5. Verfahren nach Anspruch 2, bei dem der genannte Schritt, in dem das genannte erste Anwendungsprogramm (400) die genannten Informationen untersucht und eine Teilmenge der genannten Informationen von der genannten Mehrzahl von Computern (420, 430, 440) auf der Basis des genannten benutzerdefinierten Profils (410) automatisch abruft, in periodischen Intervallen unabhängig von der Herstellung der Kommunikation mit dem genannten Server (150) durch den genannten Client (100) erfolgt.

6. Verfahren nach Anspruch 1, bei dem der genannte Schritt, in dem das genannte erste Anwendungsprogramm (400) die genannten Informationen untersucht und eine Teilmenge der genannten Informationen von der genannten Mehrzahl von Computern (420, 430, 440) auf der Basis des genannten benutzerdefinierten Profils (410) automatisch abruft, Folgendes beinhaltet:

a. das genannte erste Anwendungsprogramm (400) ruft Quellidentifikationen (810) und assoziierte Suchbegriffe von dem genannten benutzerdefinierten Profil (410) ab;
b. das genannte erste Anwendungsprogramm (400) tastet die genannten Informationen auf Quellen ab, die von den genannten Quellidentifikationen (810) identifiziert werden, und identifiziert einen ersten Satz von Dateien in den genannten Quellen, die die genannten assoziierten Suchbegriffe enthalten; und
c. das genannte erste Anwendungsprogramm (400) setzt den genannten ersten Satz von Dateien in die genannte Teilmenge der genannten Informationen.

7. Verfahren nach Anspruch 6, bei dem die genannten Quellidentifikationen (810) und zugehörigen Suchbegriffe von dem genannten benutzerdefinierten Profil nach Thema gespeichert werden.

8. Verfahren nach Anspruch 1, ferner umfassend den Schritt, dass das genannte erste Anwendungsprogramm (400) bewirkt, dass der genannte Server (150) dem genannten Benutzer Optionen (800) vorlegt, um das genannte Profil (410) zu erstellen oder zu modifizieren, wobei die genannten Optionen (800) Folgendes beinhalten:

a. eine erste Option, die es dem genannten Benutzer gestattet, Quellidentifikationen in den genannten Informationen und zugehörigen Suchbegriffen vorzugeben, nach denen in den genannten Quellidentifikationen des genannten benutzerdefinierten Profils (410) gesucht wird; und
b. eine zweite Option, die es dem genannten Benutzer gestattet, das Löschen und/oder Ändern der genannten Quellidenifikationen und/oder der genannten zugehörigen Suchbegriffe in dem genannten Profil (410) vorzugeben.

9. Verfahren nach Anspruch 8, bei dem die genannten Quellidentifikationen (810) und die genannten zugehörigen Suchbegriffe nach Themen organisiert sind.

10. Verfahren nach Anspruch 8, bei dem das Präsentieren der genannten Teilmenge der genannten Informationen durch den genannten Server, die von dem genannten ersten Anwendungsprogramm erzeugt wurden, das Präsentieren der genannten Teilmenge nach den genannten Themen organisiert umfasst.

11. System zum Abrufen von Informationen, das Folgendes umfasst:

a. einen Server (150), der mit einem Netzwerk gekoppelt ist und eine Schnittstelle aufweist, um ein erstes Anwendungsprogramm (400) zu aktivieren, das auf einen Client (100) anspricht,

der eine Identifikation eines benutzerdefinierten Profils (410) gibt;

b. wobei der genannte Server (150) eine Ausführungssteuerschnittstelle aufweist, um zu bewirken, dass das genannte erste Anwendungsprogramm (400) Informationen untersucht, die auf einer Mehrzahl von mit dem genannten Netzwerk gekoppelten Computern (420, 430, 440) gespeichert sind, und automatisch eine Teilmenge der genannten Informationen auf der Basis abruft, welche Informationen für den genannten Benutzer gemäß Definition in dem genannten benutzerdefinierten Profil (410) von Interesse sind; und

c. wobei der genannte Server (150) eine Präsentationsschaltung aufweist, um die genannte Teilmenge der genannten Informationen von der genannten Mehrzahl von Computern (420, 430, 440) dem genannten Client (100) als Reaktion auf eine Anforderung durch den genannten Client (100) zu präsentieren.

12. System nach Anspruch 11, bei dem der genannte Client (100) einen auf einem ersten Computersystem laufenden HTTP (Hypertext Transfer Protocol) Browser (200) und der genannte Server (150) einen auf einem ortsfernen Computersystem laufenden HTTP-Server (150) umfasst.

13. System nach Anspruch 11, bei dem der genannte Server (150) ferner eine Profilschaltung (410) aufweist, die es dem genannten Client (100) gestattet, das genannte benutzerdefinierte Profil (410) vorzugeben und eine Datei zu speichern, die das genannte benutzerdefinierte Profil (410) enthält, um einen Zustand des genannten benutzerdefinierten Profils (410) zu behalten.

14. System nach Anspruch 11, bei dem die genannte Ausführungssteuerschnittstelle eine Aktivierungsschaltung zum Aktivieren des genannten ersten Anwendungsprogramms (400) in periodischen Intervallen umfasst, um zu bewirken, dass das genannte erste Anwendungsprogramm (400) die genannte Untersuchung der genannten Informationen durchführt und automatisch eine Teilmenge der genannten Informationen von der genannten Mehrzahl von Computern (420, 430, 440) auf der Basis des genannten benutzerdefinierten Profils (410) abruft.

15. System nach Anspruch 11, bei dem das genannte erste Anwendungsprogramm (400) die genannten Informationen untersucht und automatisch eine Teilmenge der genannten Informationen von der genannten Mehrzahl von Computern (420, 430, 440) auf der Basis des genannten benutzerdefinierten Profils (410) abruft und Folgendes beinhaltet:

a. das genannte erste Anwendungsprogramm (400) ruft Quellidentifikationen (810) und zugehörige Suchbegriffe von dem genannten benutzerdefinierten Profil (410) ab;

b. das genannte erste Anwendungsprogramm (400) tastet die genannten Informationen auf Quellen ab, die durch die genannten Quellidentifikationen identifiziert werden, und identifiziert einen ersten Satz von Dateien in den genannten Quellen, die die genannten zugehörigen Suchbegriffe enthalten; und

c. das genannte erste Anwendungsprogramm (400) setzt den genannten ersten Satz von Dateien in die genannte Teilmenge der genannten Informationen.

16. System nach Anspruch 15, bei dem die genannten Quellidentifikationen (810) und zugehörigen Suchbegriffe aus dem genannten benutzerdefinierten Profil nach Thema gespeichert sind.

17. System nach Anspruch 11, ferner umfassend den genannten Server (150) mit einer Optionspräsentationsschaltung, um dem genannten Benutzer die genannten Optionen (800) zu präsentieren, um das genannte Profil (410) zu erzeugen oder zu modifizieren, wobei die genannten Optionen (800) Folgendes beinhalten:

a. eine erste Option, die es dem genannten Benutzer gestattet, Quellidentifikationen in den genannten Informationen und zugehörigen Suchbegriffen vorzugeben, nach denen in den genannten Quellidentifikationen des genannten benutzerdefinierten Profils (410) gesucht wird; und

b. eine zweite Option, die es dem genannten Benutzer gestattet, das Löschen und/oder Ändern der genannten Quellidentifikationen und/oder der genannten zugehörigen Suchbegriffe in dem genannten Profil (410) vorzugeben.

18. System nach Anspruch 17, bei dem die genannten Quellidentifikationen (810) und die genannten zugehörigen Suchbegriffe nach Themen organisiert sind.

19. System nach Anspruch 18, bei dem die genannte Präsentationsschaltung zum Präsentieren der genannten Teilmenge der genannten Informationen wie durch das genannte erste Anwendungsprogramm (400) erzeugt eine Themenpräsentationsschaltung umfasst, um die genannte Teilmenge der genannten Informationen nach den genannten Themen organisiert zu präsentieren.

Revendications

1. Procédé de recouvrement d'informations mis en oeuvre sur ordinateur comprenant les étapes de :

   a. établissement par un client commandé par utilisateur (100) d'une communication avec un serveur (150), ledit serveur étant couplé à un réseau ;
   b. fourniture par ledit client (100) d'une identification d'un profil défini par l'utilisateur (410) audit serveur (150) ;
   c. engagement par ledit serveur (150) d'un premier programme d'application (400), ledit premier programme d'application (400) recouvrant ledit profil défini par l'utilisateur (410) ;
   d. examen par ledit premier programme d'application (400) d'informations mémorisées sur une pluralité d'ordinateurs (420, 430, 440) couplés audit réseau et recouvrement automatique par ledit premier programme d'application d'un sous-ensemble desdites informations à partir de ladite pluralité d'ordinateurs (420, 430, 440) en fonction dudit profil défini par l'utilisateur (410) ; et
   e. transmission par ledit premier programme d'application (400) dudit sous-ensemble desdites informations depuis ladite pluralité d'ordinateurs (420, 430, 440) audit serveur (150) et présentation par ledit serveur (150) dudit sous-ensemble desdites informations audit client (100).

2. Procédé selon la revendication 1, dans lequel ledit client (100) comprend un navigateur HTTP (Hypertext Transfer Protocol) actif sur un premier système informatique et ledit serveur (150) comprend un programme d'application de serveur HTTP actif sur un deuxième système informatique.

3. Procédé selon la revendication 2, dans lequel ledit programme d'application de serveur HTTP communique avec ledit premier programme d'application (400) actif sur ledit deuxième système informatique avec une Interface Passerelle commune (GCI 220).

4. Procédé selon la revendication 3, comprenant en outre l'étape de mémorisation par ledit premier programme d'application (400) d'un fichier dans ledit deuxième système informatique contenant ledit profil défini par l'utilisateur (410) afin de conserver un état dudit profil d'utilisateur.

5. Procédé selon la revendication 2, dans lequel ladite étape d'examen desdites informations par ledit premier programme d'application (400) et de recouvrement automatique par ledit premier programme d'application d'un sous-ensemble desdites informations depuis ladite pluralité d'ordinateurs (420, 430, 440) en fonction dudit profil défini par l'utilisateur (410) est exécutée à intervalles périodiques indépendamment de l'établissement par le client (100) d'une communication avec ledit serveur (150).

6. Procédé selon la revendication 1, dans lequel ladite étape d'examen desdites informations par ledit premier programme d'application (400) et de recouvrement automatique par ledit premier programme d'application d'un sous-ensemble desdites informations depuis ladite pluralité d'ordinateurs (420, 430, 440) en fonction dudit profil défini par l'utilisateur (410) comporte :

   a. le recouvrement par ledit premier programme d'application (400) d'identifications de sources (810) et de termes de recherche associés à partir dudit profil défini par l'utilisateur (410).
   b. le balayage par ladite première application (400) desdites informations à la recherche de sources identifiées par lesdites identifications de sources (810) et l'identification d'un premier sous-ensemble de fichiers dans lesdites sources contenant lesdits termes de recherche associés ; et
   c. le placement par ledit premier programme d'application (400) dudit premier ensemble de fichiers dans ledit sous-ensemble desdites informations.

7. Procédé selon la revendication 6, dans lequel lesdites identifications de sources (810) et termes de recherche associés provenant dudit profil défini par l'utilisateur sont mémorisés par thème.

8. Procédé selon la revendication 1, comprenant en outre l'étape d'incitation par ledit premier programme d'application (400) dudit serveur (150) afin qu'il présente des options (800) audit utilisateur afin de créer ou de modifier ledit profil (410), lesdites options (800) comportant :

   a. une première option permettant audit utilisateur de spécifier des identifications de sources dans lesdites informations et termes de recherche associés à rechercher dans lesdites identifications de sources dudit profil défini par l'utilisateur (410) ; et
   b. une deuxième option permettant audit utilisateur de spécifier une suppression et/ou un changement desdites identifications de sources et/ou desdits termes de recherche associés dans ledit profil (410).

9. Procédé selon la revendication 8, dans lequel lesdites identifications de sources (810) et lesdits termes de recherche associés sont organisés par thèmes.

10. Procédé selon la revendication 8, dans lequel ledit serveur présentant ledit sous-ensemble desdites informations tel que généré par ledit premier programme d'application comprend la présentation dudit sous-ensemble organisé par lesdits thèmes.

11. Système de recouvrement d'informations comprenant :

a. un serveur (150) couplé à un réseau et ayant une interface pour engager un premier programme d'application (400) en réponse à la fourniture par un client (100) d'une identification d'un profil défini par l'utilisateur (410) ;
b. ledit serveur (150) ayant une interface de commande d'exécution pour inciter ledit premier programme d'application (400) à examiner des informations mémorisées sur une pluralité d'ordinateurs (420, 430, 440) couplés audit réseau et à recouvrer automatiquement un sous-ensemble desdites informations en fonction des informations qui intéressent ledit utilisateur telles qu'identifiées dans ledit profil défini par l'utilisateur (410) ; et
c. ledit serveur (150) ayant un circuit de présentation pour présenter ledit sous-ensemble desdites informations provenant de ladite pluralité d'ordinateurs (420, 430, 440) audit client (100) en réponse à une demande par ledit client (100).

12. Système selon la revendication 11, dans lequel ledit client (100) comprend un navigateur HTTP (Hypertext Transfer Protocol) (200) fonctionnant sur un premier système informatique et ledit serveur (150) comprend un serveur HTTP (150) fonctionnant sur un système informatique distant.

13. Système selon la revendication 11, dans lequel ledit serveur (150) comporte en outre un circuit de profil (410) pour permettre audit client (100) de spécifier ledit profil défini par l'utilisateur (410) et de mémoriser un fichier contenant ledit profil défini par l'utilisateur (410) afin de conserver un état dudit profil défini par l'utilisateur (410).

14. Système selon la revendication 11, dans lequel ladite interface de commande d'exécution comprend un circuit d'activation pour activer ledit premier programme d'application (400) à intervalles périodiques afin d'inciter ledit premier programme d'application (400) à effectuer ledit examen desdites informations et à recouvrer automatiquement un sous-ensemble desdites informations à partir de ladite pluralité d'ordinateurs (420, 430, 440) en fonction dudit profil défini par l'utilisateur (410).

15. Système selon la revendication 11, dans lequel l'examen desdites informations et le recouvrement automatique par ledit premier programme d'application (400) d'un sous-ensemble desdites informations à partir de ladite pluralité d'ordinateurs (420, 430, 440) en fonction dudit profil défini par l'utilisateur (410) comportent :

a. le recouvrement par ledit premier programme d'application (400) d'identifications de sources (810) et de termes de recherche associés à partir dudit profil défini par l'utilisateur (410).
b. le balayage par ledit premier programme d'application (400) desdites informations à la recherche de sources identifiées par lesdites identifications de sources et l'identification d'un premier sous-ensemble de fichiers dans lesdites sources contenant lesdits termes de recherche associés ; et
c. le placement par ledit premier programme d'application (400) dudit premier ensemble de fichiers dans ledit sous-ensemble desdites informations.

16. Système selon la revendication 15, dans lequel lesdites identifications de sources (810) et termes de recherche associés provenant dudit profil défini par l'utilisateur sont mémorisés par thème.

17. Système selon la revendication 11, comprenant en outre la caractéristique que ledit serveur (150) a un circuit de présentation d'options pour présenter lesdites options (800) audit utilisateur afin de créer ou de modifier ledit profil (410), lesdites options (800) comportant :

a. une première option permettant audit utilisateur de spécifier des identifications de sources dans lesdites informations et termes de recherche associés à rechercher dans lesdites identifications de sources dudit profil défini par l'utilisateur (410) ; et
b. une deuxième option permettant audit utilisateur de spécifier une suppression et/ou un changement desdites identifications de sources et/ou desdits termes de recherche associés dans ledit profil (410).

18. Système selon la revendication 17, dans lequel lesdites identifications de sources (810) et lesdits termes de recherche associés sont organisés par thèmes.

19. Système la revendication 18, dans lequel ledit circuit de présentation pour présenter ledit sous-ensemble desdites informations tel que généré par ledit premier programme d'application (400) comprend un circuit de présentation de thèmes pour présenter ledit sous-ensemble desdites informa-

tions organisées en lesdits thèmes.

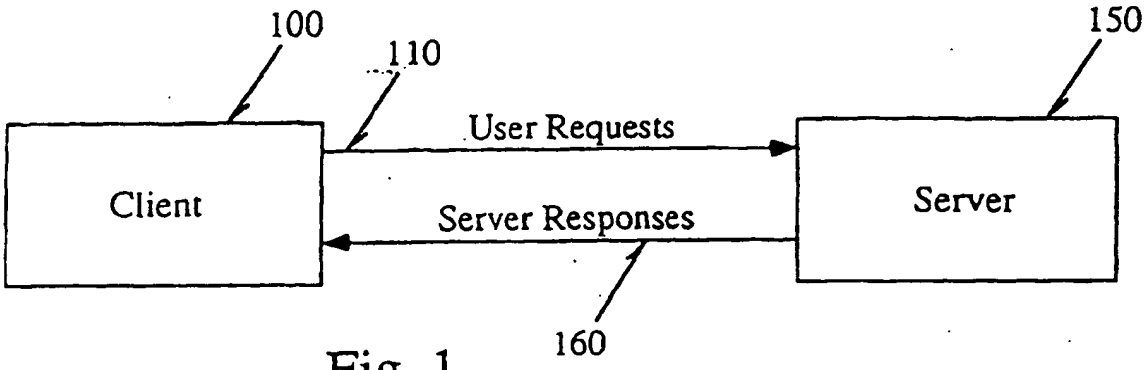

100
110
150
User Requests
Client
Server
Server Responses
160

Fig. 1

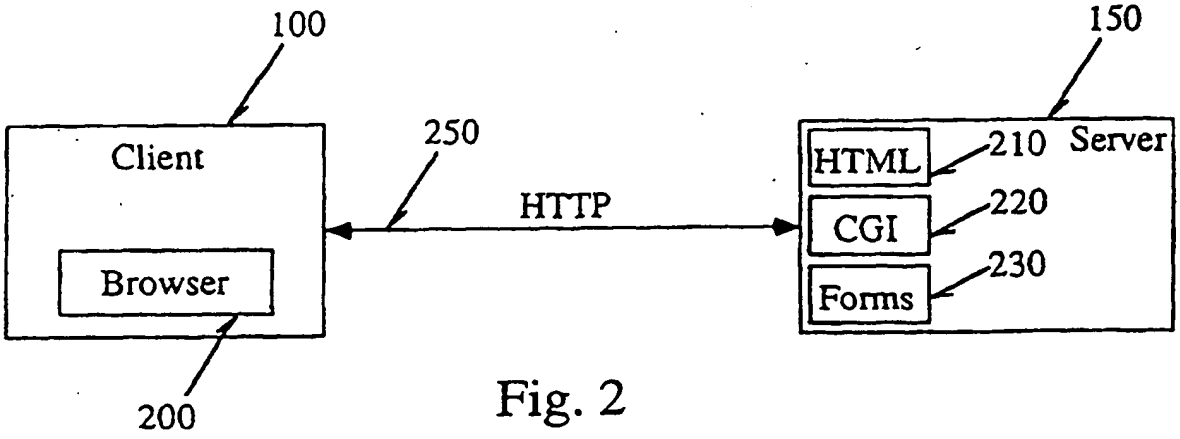

100
150
Client
250
HTML
210
Server
HTTP
CGI
220
Browser
230
Forms
200

Fig. 2

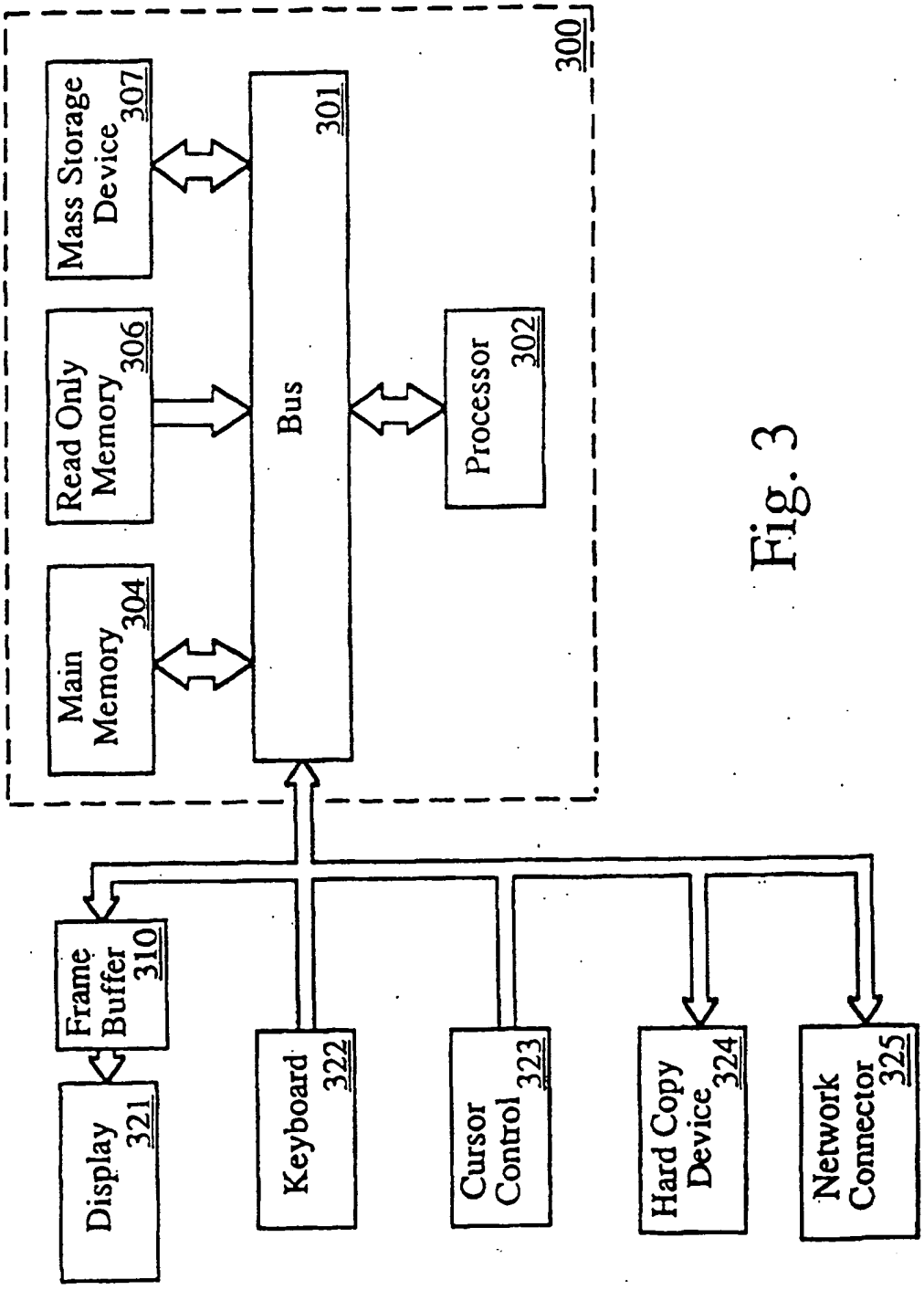

300
Mass Storage Device 307
Read Only Memory 306
Main Memory 304
Bus 301
Processor 302
Frame Buffer 310
Display 321
Keyboard 322
Cursor Control 323
Hard Copy Device 324
Network Connector 325

Fig. 3

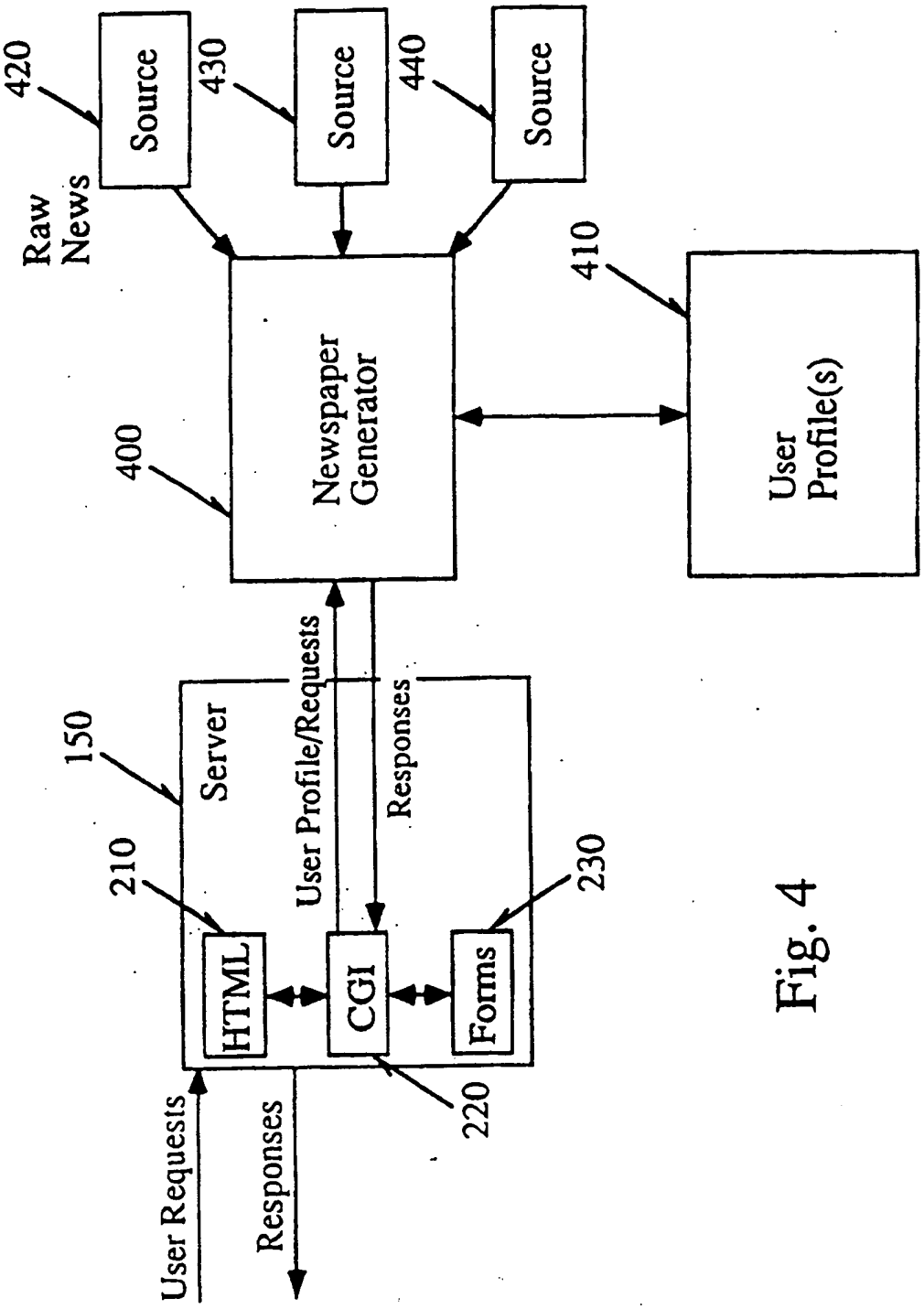

420
Source
430
Source
440
Source
Raw News
410
User Profile(s)
400
Newspaper Generator
150
Server
User Profile/Requests
Responses
210
HTML
CGI
Forms
230
220
User Requests
Responses

Fig. 4

Fig. 5a

500

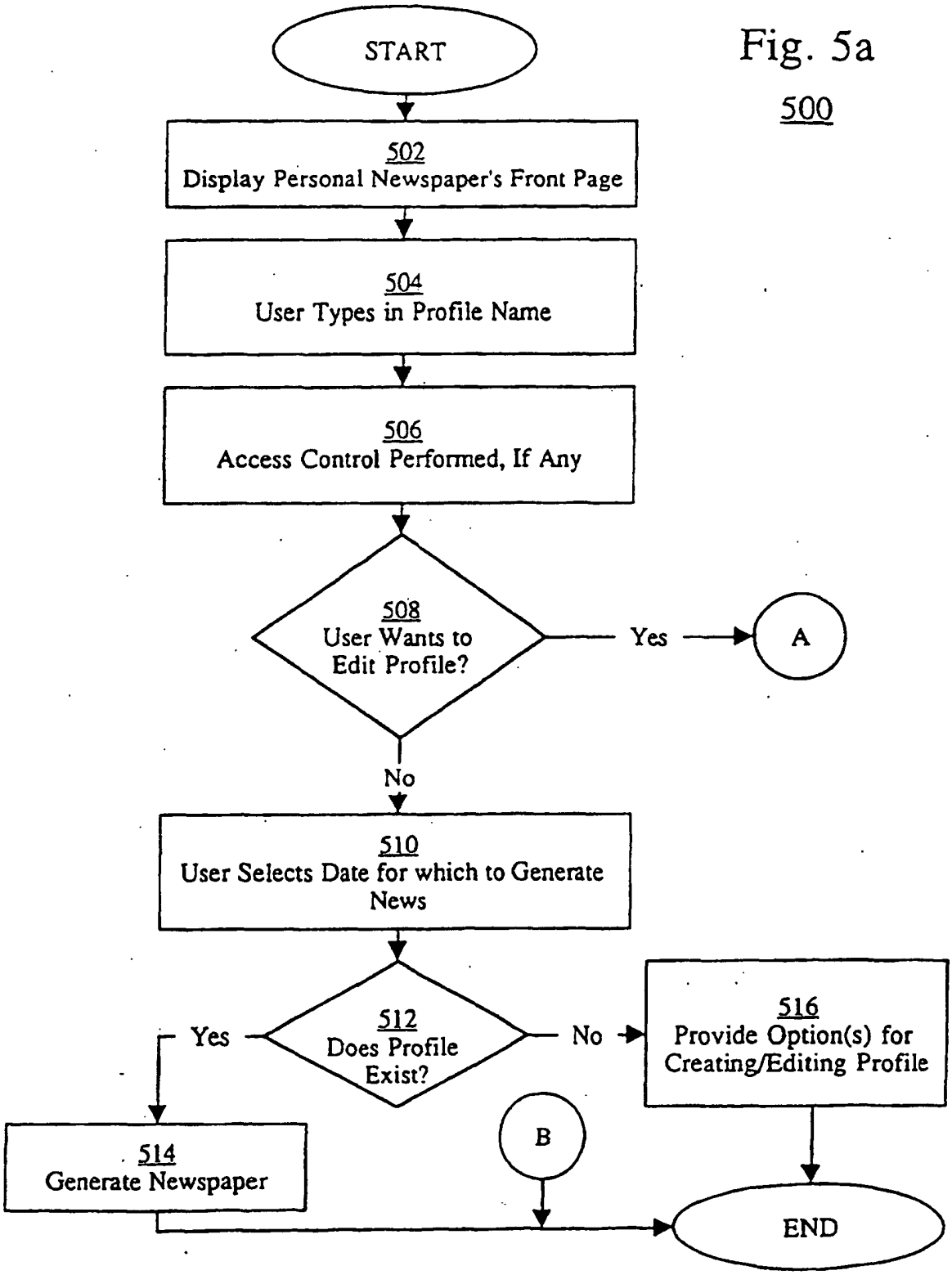
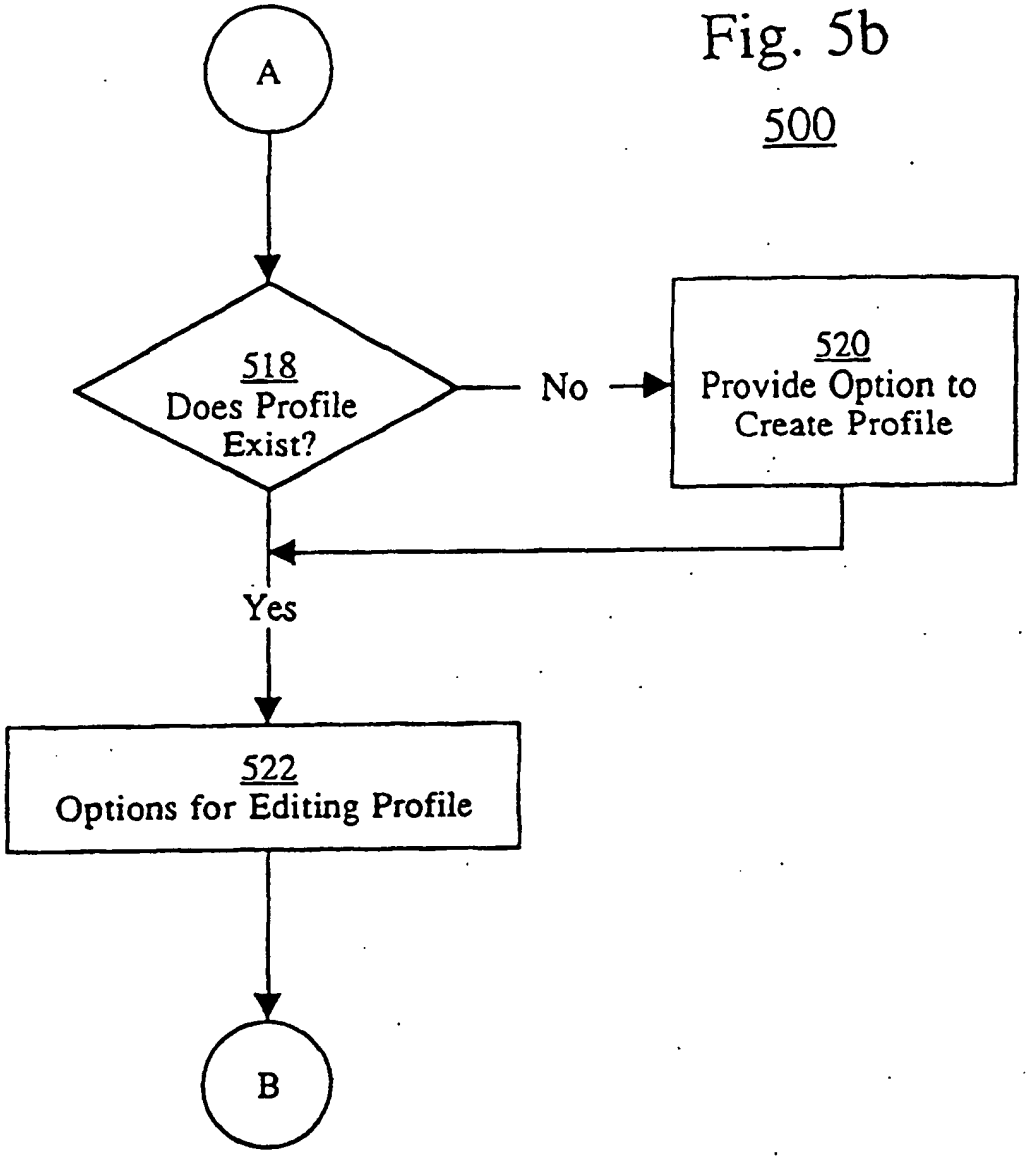

START
502
Display Personal Newspaper's Front Page
504
User Types in Profile Name
506
Access Control Performed, If Any
508
User Wants to Edit Profile?
Yes
A
No
510
User Selects Date for which to Generate News
512
Does Profile Exist?
Yes
No
516
Provide Option(s) for Creating/Editing Profile
514
Generate Newspaper
B
END

Fig. 5b

500


A
518
Does Profile Exist?
No
520
Provide Option to Create Profile
Yes
522
Options for Editing Profile
B

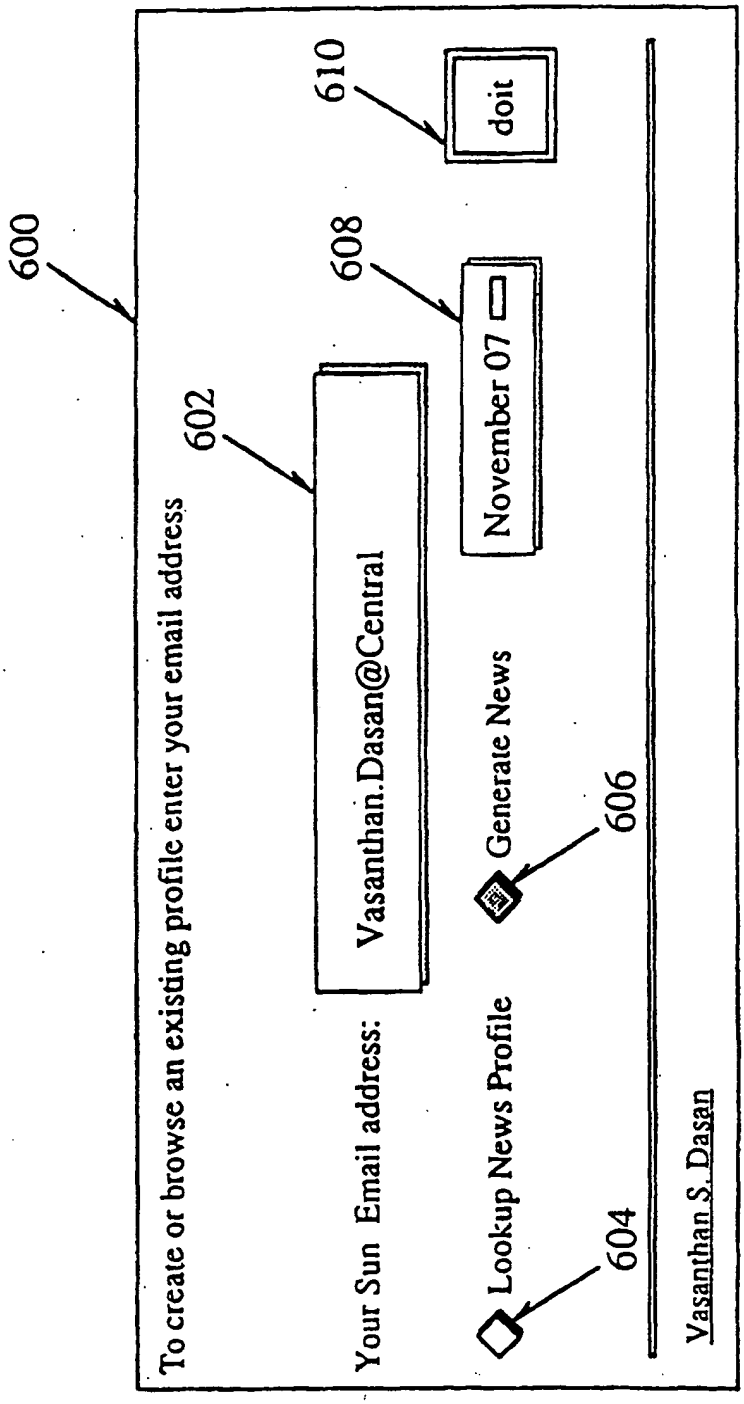

600
To create or browse an existing profile enter your email address
602
Your Sun Email address:
Vasanthan.Dasan@Central
608
November 07
610
doit
Generate News
606
Lookup News Profile
604
Vasanthan S. Dasan

Fig. 6

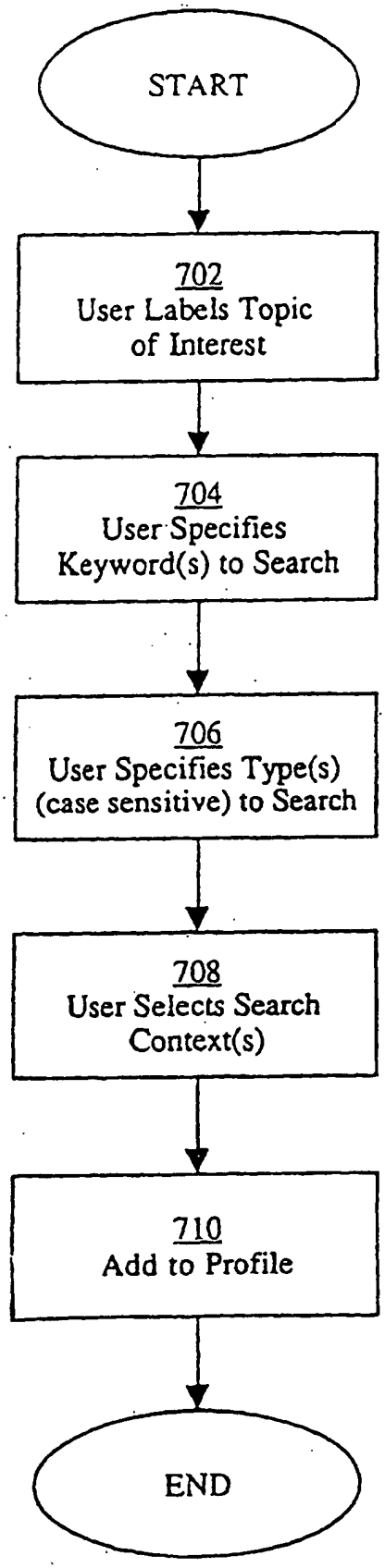


Fig. 7

Add to Profile

700

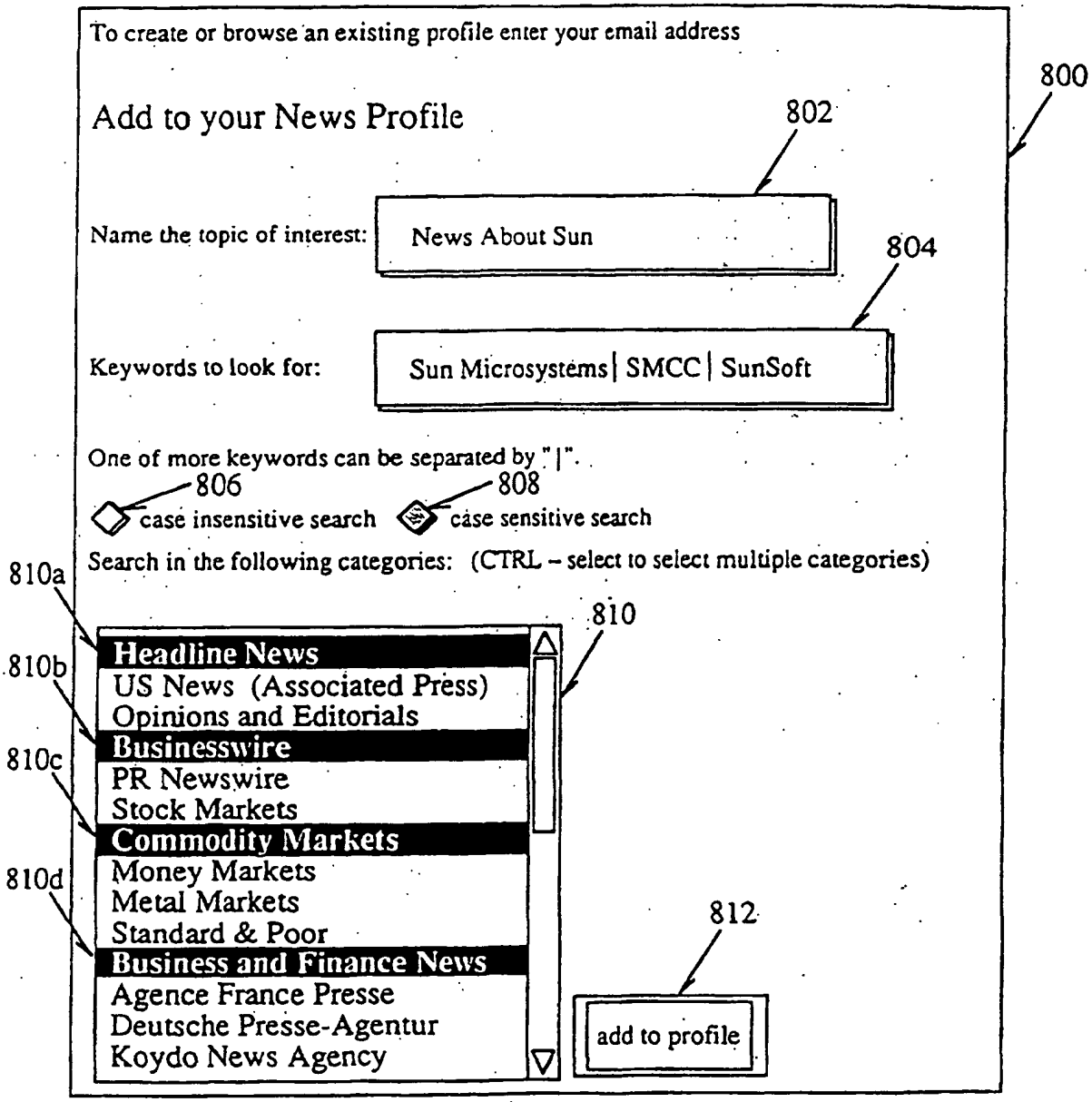
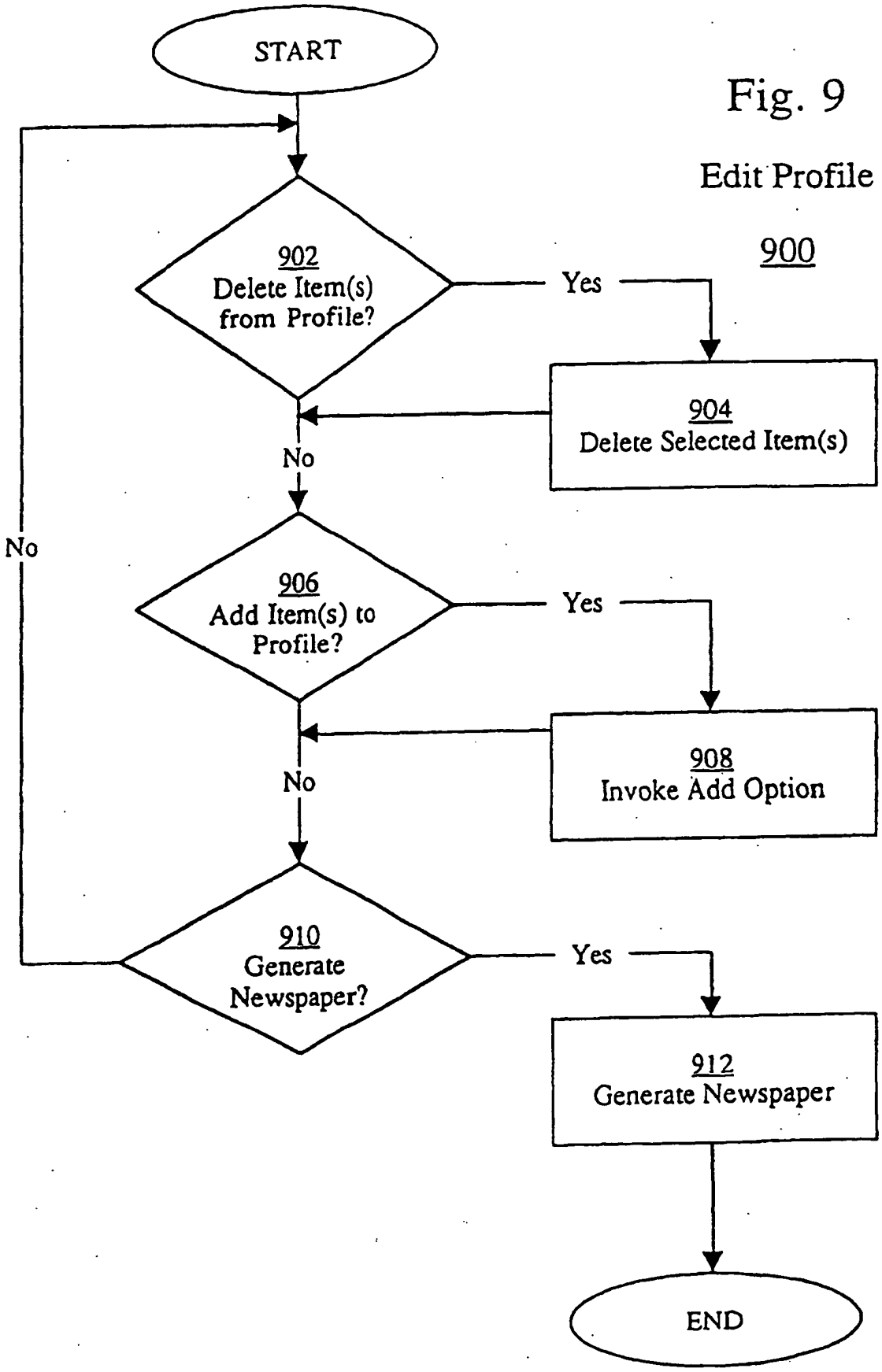

To create or browse an existing profile enter your email address
800
Add to your News Profile
802
Name the topic of interest:
News About Sun
804
Keywords to look for:
Sun Microsystems | SMCC | SunSoft
One of more keywords can be separated by "|".
806
case insensitive search
808
case sensitive search
Search in the following categories: (CTRL – select to select multiple categories)
810a
810b
810c
810d
810
Headline News
US News (Associated Press)
Opinions and Editorials
Businesswire
PR Newswire
Stock Markets
Commodity Markets
Money Markets
Metal Markets
Standard & Poor
Business and Finance News
Agence France Presse
Deutsche Presse-Agentur
Koydo News Agency
812
add to profile

Fig. 8

Fig. 9

Edit Profile

900



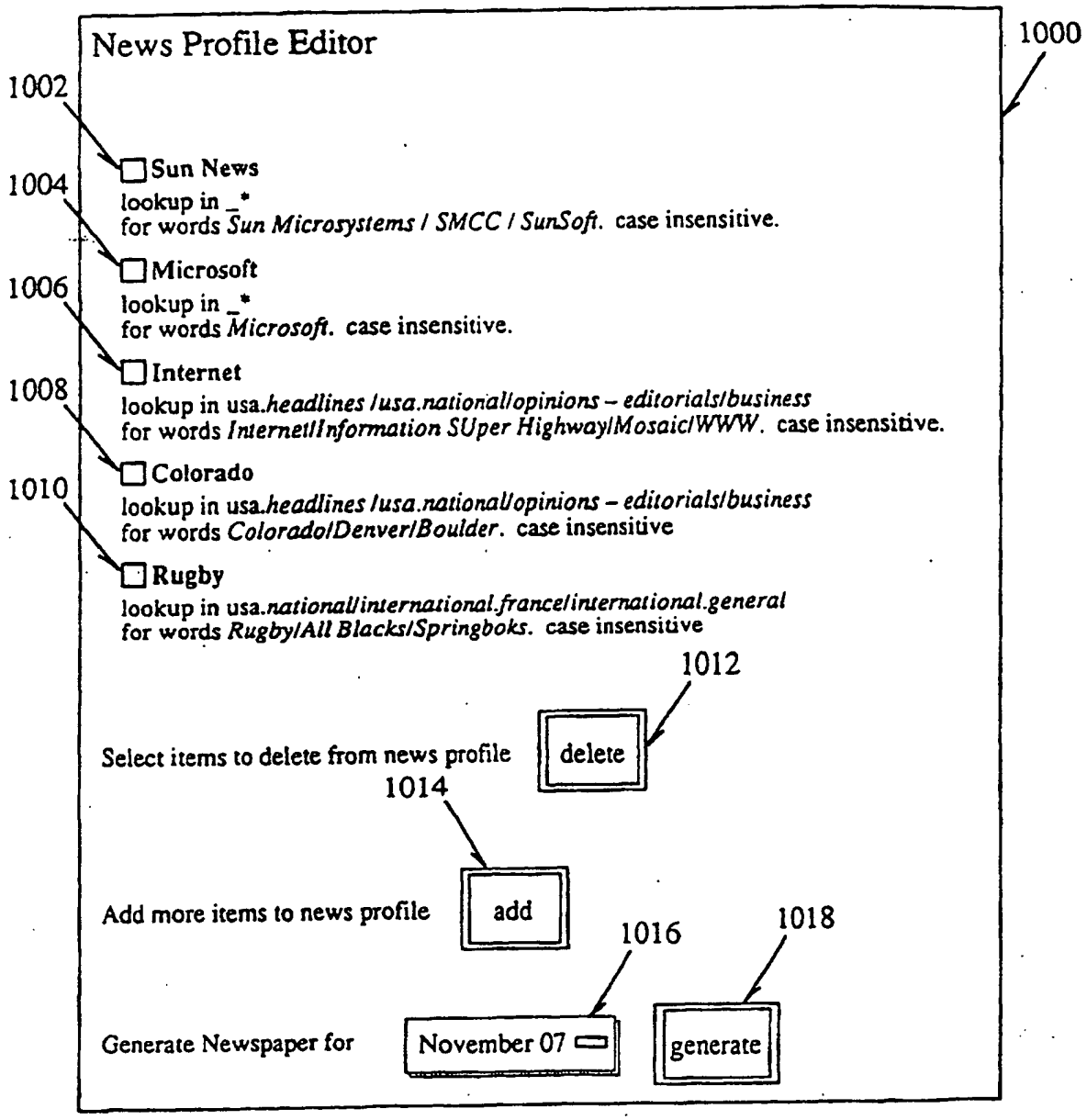

News Profile Editor
1000
1002
Sun News
lookup in _*
for words Sun Microsystems / SMCC / SunSoft. case insensitive.
1004
Microsoft
lookup in _*
for words Microsoft. case insensitive.
1006
Internet
lookup in usa.headlines /usa.national/opinions – editorials/business
for words Internet/Information SUper Highway/Mosaic/WWW. case insensitive.
1008
Colorado
lookup in usa.headlines /usa.national/opinions – editorials/business
for words Colorado/Denver/Boulder. case insensitive
1010
Rugby
lookup in usa.national/international.france/international.general
for words Rugby/All Blacks/Springboks. case insensitive
1012
Select items to delete from news profile
delete
1014
Add more items to news profile
add
1016
1018
Generate Newspaper for
November 07
generate

Fig. 10

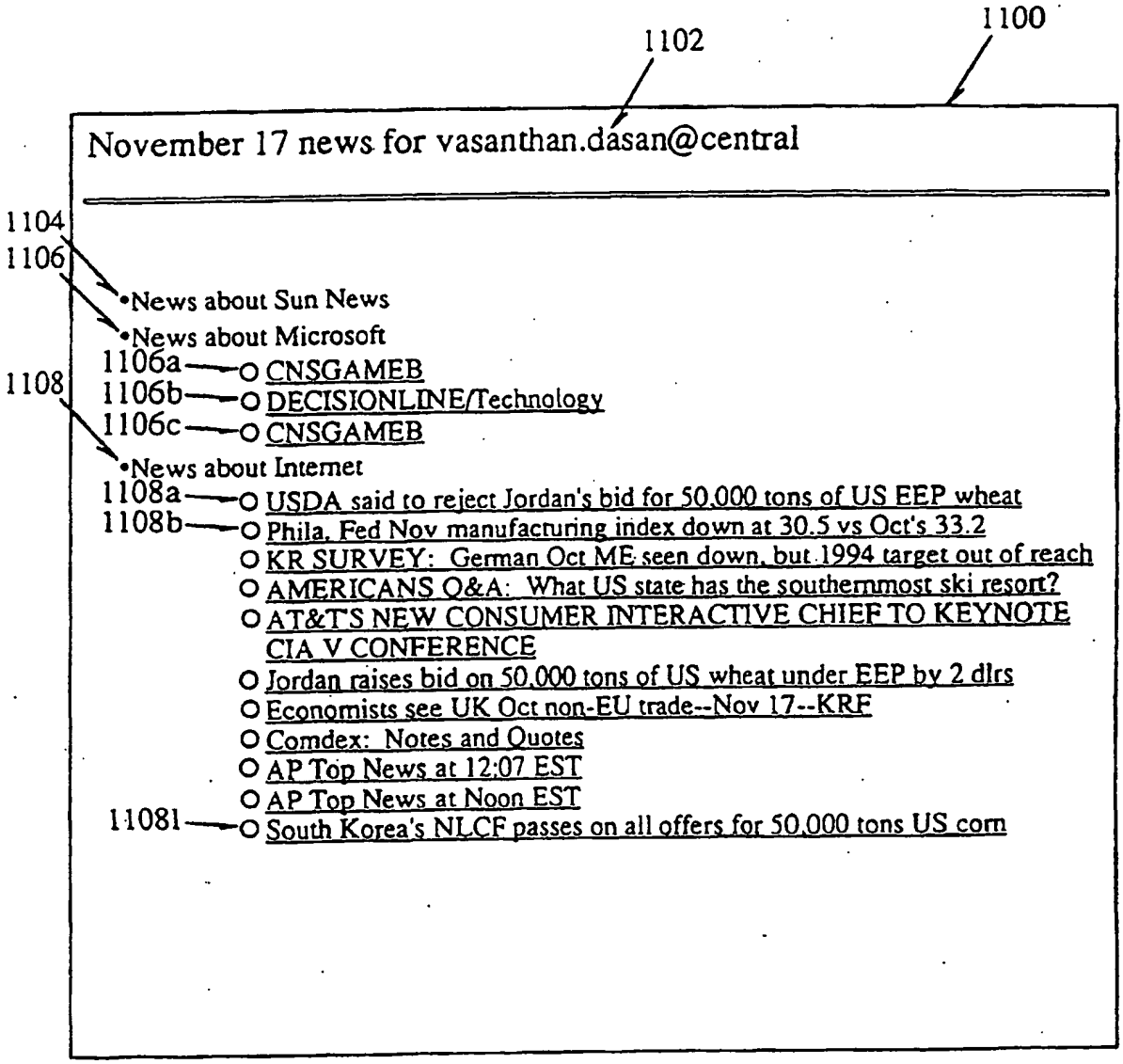

1100
1102
November 17 news for vasanthan.dasan@central
1104
1106
•News about Sun News
•News about Microsoft
1106a
CNSGAMEB
1108
1106b
DECISIONLINE/Technology
1106c
CNSGAMEB
•News about Internet
1108a
USDA said to reject Jordan's bid for 50,000 tons of US EEP wheat
1108b
Phila. Fed Nov manufacturing index down at 30.5 vs Oct's 33.2
KR SURVEY: German Oct ME seen down, but 1994 target out of reach
AMERICANS Q&A: What US state has the southernmost ski resort?
AT&T'S NEW CONSUMER INTERACTIVE CHIEF TO KEYNOTE CIA V CONFERENCE
Jordan raises bid on 50,000 tons of US wheat under EEP by 2 dlrs
Economists see UK Oct non-EU trade--Nov 17--KRF
Comdex: Notes and Quotes
AP Top News at 12:07 EST
AP Top News at Noon EST
11081
South Korea's NLCF passes on all offers for 50,000 tons US corn

Fig. 11

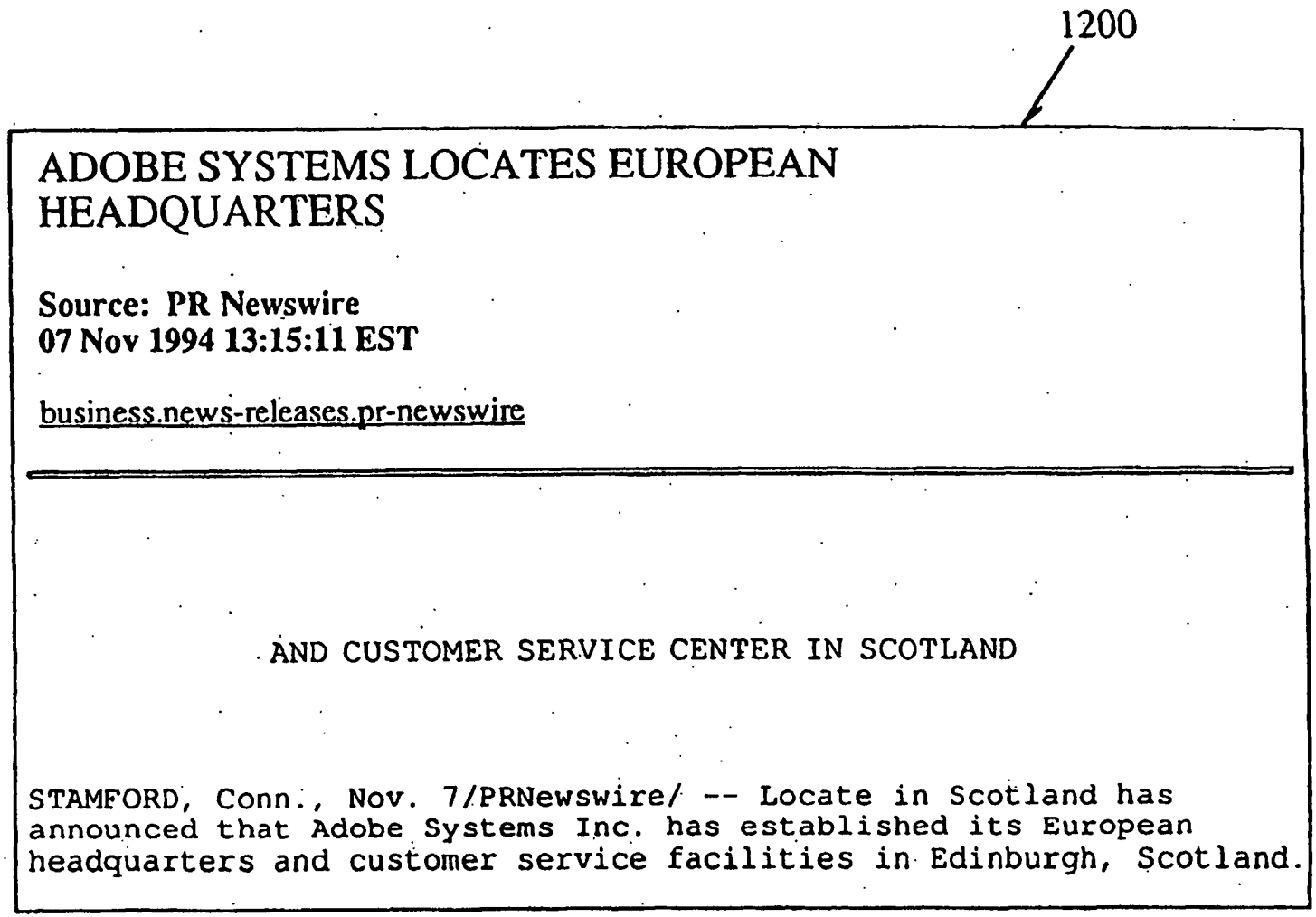


Fig. 12

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